United Nations ECE/CES/2015/40

Economic and Social Council

Distr.: General
1 June 2015

English only

Economic Commission for Europe

Conference of European Statisticians

Sixty-third plenary session
Geneva, 15-17 June 2015
Item 7 (a) of the provisional agenda
Reports on the work of the Conference of European Statisticians, its Bureau and Teams of Specialists

Main directions of work in preparing a Guide on Measuring Human Capital

Note by the Secretariat

Summary

This document presents the outline and the main directions of work in preparing a *Guide on Measuring Human Capital*. The work is being carried out by a Task Force on Measuring Human Capital which was established by the Conference of European Statisticians in 2013.

The Conference is invited to take note of the main directions of work and the outline of the Guide, and send written comments and suggestions to the UNECE secretariat (andres.vikat@unece.org).

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I. Background

1. Understanding human capital is of significant interest to policymakers. Statistics on human capital may help to understand the drivers of economic growth and the functioning of the labour market, as well as to assess the long-term sustainability of a country's development path.

2. Based on the outcome of a Conference of European Statisticians (CES) seminar in 2011 and the recommendations in the subsequent stock-taking report, CES established the Task Force on Measuring Human Capital in 2013. Its objective is to pursue the conceptual development of human capital measurement, with priority on developing experimental human capital satellite accounts.

3. The Task Force has 19 members: from Australia, Canada, Italy, Netherlands, New Zealand, Norway, Poland, Slovenia, United Kingdom, United States, OECD, UNECE, the Wittgenstein Centre for Demography and Global Human Capital, Universities of Maryland and Madison-Wisconsin, and the Central University for Finance and Economics in Beijing. Ms Ann Lisbet Brathaug from Statistics Norway chairs the Task Force.

4. The Task Force commenced its activities in 2014 towards developing a *Guide on measuring human capital*. At its first face-to-face meeting in June 2014 in Geneva, it agreed on the outline of the Guide and distributed responsibilities among its members for drafting the chapters. The drafts were discussed electronically and at audio conferences. At its second face-to-face meeting in April 2015 in Paris, the Task Force decided on a number of specific methodological issues and a timetable for the next steps. UNECE plans to engage an experienced editor to streamline and edit the various chapters of the Guide.

5. The Task Force plans to present a draft Guide to the February 2016 meeting of the CES Bureau. Upon the Bureau's approval, the Guide will be sent for consultation among all CES members in spring 2016, and subsequently submitted to the 2016 CES plenary session for endorsement.

6. The Conference is invited to provide comments and suggestions on the main directions of work presented below and the outline presented in Section III (please send the comments to: andres.vikat@unece.org).

II. Main directions of work

7. The *Guide on measuring human capital* will contain recommendations on the methods and sources to compile human capital measures. It will also discuss the setup of a satellite account for human capital, but concludes that more research is needed before this approach could be recommended. Therefore, as a first step, the guide suggests starting with the development of a satellite account on education and training.

8. The Guide will discuss the cost approach and the lifetime income approach as the main methods to measure human capital. Both methods combine the different aspects of human capital in a single metric, but give different values. The indicator approach will only be recommended for providing complementary information for volume estimates, quality adjustment and cross-checking. The Guide will not recommend the use of indirect methods.

9. The cost approach is in line with the Perpetual Inventory Method that is often applied for the measurement of fixed assets in the System of National Accounts

(SNA). It also provides an estimate of the resources invested in education and other human capital related expenses, which can be useful for cost-benefit analyses. This approach is also in line with the recommendations for the compilation of a satellite account for education and training. For the cost-based approach, the Kendrick methodology[1] will be introduced.

10. In the case of the cost approach, the Guide will mainly consider the following elements:

(a) Formal education services paid by households or provided for free or at reduced prices by government;

(b) Training and courses provided by employers and;

(c) The foregone earnings of students (time spent studying).

11. The last component will extend the SNA production boundary. Further work is needed to define its exact coverage. Taking into account issues related to data availability and measurement, other non-market activities will be kept outside the scope of these human capital estimates.

12. The lifetime income approach is more consistent with economic theory and better represents the relationship with productive capacity needed for future production. It also allows outputs to be measured independently of inputs when estimating the productivity of the education sector. The presentation in the Guide will rely on the Jorgenson and Fraumeni method[2]. For international comparability, the Guide will recommend using:

(a) The SNA concept of compensation of employees, supplemented with an imputation for labour income of self-employed and;

(b) Working age population without suggesting a specific upper age limit, as this depends on the actual retirement age in the country.

13. The Guide will advise countries to provide sufficient metadata to allow cross-country comparisons.

14. From a conceptual point of view, the lifetime income approach is more consistent with market price valuation of the assets. However, from the point of view of data availability, the Guide will encourage the development of cost-based measures as a country's first step in human capital measurement.

15. The Guide will discuss compiling both monetary and volume measures of human capital. The methods to arrive at volume estimates will be made conceptually consistent with general methodology for measuring volumes in the system of national accounts.

16. The Guide will outline a two-step approach to linking human capital estimates to SNA. At a first stage, it will recommend developing a satellite account

[1] Kendrick, J.W. (1976), The Formation and Stocks of Total Capital. New York: Columbia University Press.

[2] Jorgenson, D. W. and Fraumeni, B. M. (1989). The accumulation of human and non-human capital, 1948-1984. In R. E. Lipsey and H. S. Tice (Eds.), The Measurement of Savings, Investment and Wealth (pp. 227-282). Chicago, IL: The University of Chicago Press. Jorgenson, D.W and B.M. Fraumeni (1992), The Output of Education Sector, in Z. Griliches (ed.) Output Measurement in the Service Sectors, The University of Chicago Press, Chicago. Jorgenson, D.W and B.M. Fraumeni (1992), "Investment in Education and U.S. Economic Growth", Scandinavian Journal of Economics, 94, Supplement, 51-70.

for education and training. Such an account will use the supply and use framework as a starting point, introducing further breakdowns of the various expenses related to the formation of human capital by type of product and producing unit, including breakdowns into the various types of (formal) education. It will also recommend a breakdown of labour input and compensation of employees by level of educational attainment. This satellite account will provide most of the components of the cost-based method. The idea behind the satellite account is to describe the educational system from an expenditure perspective, i.e. which education services are provided and by whom, and who is benefiting from the services.

17. As a further step, the Guide will present a complete satellite account for human capital where expenditures on human capital are classified as investments. It will outline the different imputations in the accounts and the changes to the components of the production accounts (including Gross Domestic Product (GDP)), and the current and capital accounts. The reclassification of education and training expenditures as investments will obviously have an impact on GDP. The impact, however, is depending on the method and the assumptions used for estimating the investments.

III. Outline of the Guide

A. Chapter 1: Introduction

18. Chapter 1 will provide the context to the production of the Guide and explain its importance and policy relevance. It will then provide a short overview of each chapter.

B. Chapter 2: Concepts and definitions

19. Chapter 2 will provide a general framework of the concepts underlying the measurement of human capital and on the ways how human capital can be incorporated into the SNA. It will describe the two preferred methods to estimate the economic value of human capital: the cost approach and the lifetime income approach. The chapter will debate the appropriateness of fully integrating human capital in the framework of national accounts, particularly with the challenges posed by the measurement of the accumulation and obsolescence of human capital, and suggest the production of satellite accounts for education and training as the first step. The chapter will also elaborate on the differences between the cost and lifetime income approaches.

C. Chapter 3: Methodological issues

20. Chapter 3 will look at the methodological challenges related to the measurement of human capital. It will look at the theoretical basis for the cost-based and lifetime income approaches and their challenges, and highlight the need for arriving at estimates of stocks, investments and consumption of human capital for integrating human capital into national accounts.

21. The chapter will recommend inclusion of the time used for studying (foregone earnings) as a component of the cost approach, making clear that this estimate extends the production boundary of the current system of national accounts.

The chapter will recommend compiling both current price and constant price (volume) measures of human capital.

D. Chapter 4: Implementation and measurement issues

22. Chapter 4 will follow the methodological discussions from chapter 3, focusing on operational aspects of arriving at internationally comparable measurement and data. The main text will discuss the cost-based method, the lifetime income-based method and the indicator approach.

23. The data requirements for the implementation of human capital measures will also be discussed, including information on the methodologies and data sources for estimates on:

(a) Expenditures on formal education and on-the-job-training;

(b) Foregone costs for students in education and employees in training;

(c) Depreciation rates related to the various investments in human capital;

(d) Initial human capital stocks and;

(e) Price indices.

24. While data for (a) can be relatively easily obtained, the Guide will consider the necessary assumptions to calculate (b)-(e).

25. For the lifetime income-based method, the Jorgenson-Fraumeni methodology will be introduced. This chapter will also describe the necessary data and assumptions to estimate lifetime income, which includes:

(a) Educational attainment;

(b) Enrolment;

(c) School duration;

(d) Employment;

(e) Labour compensation;

(f) Income growth rate and discount rate;

(g) Volume index;

(h) Migration; and

(i) Training, including the relevant breakdowns by sex, age and education level.

E. Chapter 5: Satellite account for education and training

26. Chapter 5 will present a satellite account for education and training, which is the recommended starting point for the estimates of human capital. The chapter will show an extended supply and use table integrating various more detailed data on education services, time used for studying, and labour inputs. The chapter will present the recommended level of detail and identify the data limitations.

F. Chapter 6: Going beyond SNA

27. The chapter will provide a satellite framework for the full and consistent introduction of human capital into the SNA. The main concept is that economic aggregates such as GDP, investment, consumption, savings and wealth, change when the production and asset boundary in the SNA is broadened to include human capital.

28. The chapter will discuss the integration of both cost-based and income-based estimates of human capital into SNA, their impacts, technical components and necessary assumptions. Moreover, it will discuss the changes in the various accounts of the SNA, including its impact on GDP, gross national income (GNI) and household accounts more generally. The chapter will also indicate that this type of analysis can be expanded to include other types of human capital investment, such as investment in health, informal training and costs of child rearing.

G. Chapter 7: Human capital country studies

29. This chapter will showcase some practical examples of how human capital has been measured in some country-specific contexts, the type of data used and the possibilities of replication of these studies to other countries.